

# IMPROVEMENT OF THE BOLTZMANN THEORY\*

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## Abstract

For system of randomly arranged plane-parallel dielectric layers with randomly varying index of refraction and width, we compare the reflection coefficient derived from the Maxwell equations with that of the Boltzmann theory [1]. For a strictly monochromatic field this coefficient is an oscillatory function of the laser frequency. We show how suitable frequency or ensemble averaging permits a comparison of the two theories. The calculation of the usual Boltzmann scattering coefficient from microscopic parameters can be improved to permit a better agreement with the exact Maxwell data.

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[1] Q. Su, M. Narter, S. Menon, and R. Grobe, SPIE 5254, 73-82 (2003).

## Category

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